**Normalization in DBMS -**

Normalization is the process of organizing the data in the database and minimizing the redundancy from the relation or set of relations.

Normalization divides the larger table into the smaller table and links them using relationship.

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There are 4 type of Normal Forms:

1. 1NF

2. 2NF

3. 3NF

4. BCNF(Boyce Codd Normal Form)

**1. 1NF** - A relation will be called in 1NF if there is an atomic value or only one value present in each cell. It states that attributes of a table cannot hold more than one value.

For Example - If any table has an attribute Phone\_Number and a row in that table has more than one phone number in that attribute then the table is not in 1NF.

**2. 2NF** - For a relation to be in 2NF, it should be in 1NF and must not have any partial dependency.

If the proper subset of candidate key determines non-prime attribute, then it is called partial dependency.

So to be in 2NF, there must not have any partial dependency in a relation or set of relations.

**3. 3NF** - A relation will be in 3NF if it is in 2NF and does not have any transitive dependency. If there is no transitive dependency for non-prime attributes, then the relation must be in 3rd Normal Form.

A relation is in 3NF if it holds at least one of the conditions for every non-trivial functional dependency X -> Y

where

1. X is super key

2. Y is a prime attribute means each element of Y is part of some candidate key.

**4. BCNF -** A relation will be called in BCNF (Boyce Codd Normal Form) if it is in 3NF and has no multi-valued dependency.Means for a functional dependency X -> Y, if there is multiple values of Y present for single value of X, then it is called multi-valued dependency.

So there must not be any multivalued dependency in BCNF.